

Page 43, following the last paragraph, insert:

A<sup>1</sup> What is claimed and desired to be secured by Letters Patent of the United States is:--.

IN THE CLAIMS

Rewrite claims 3-5, 8-10, 12-19, 21, 23-26, and 29-36 as follows:

A<sup>2</sup> 3. (amended) Purified or isolated nucleic acid according to claim 1, characterized in that it comprises at least one sequence of at least 15 consecutive nucleotides of the nt 714-809, ends inclusive, fragment of the sequence SEQ ID No. 2, of the sequence complementary thereto or of the sequence of the corresponding RNA thereof.

4. (amended) Purified or isolated nucleic acid according to claim 1, characterized in that it comprises a mutation corresponding to a natural polymorphism in humans.

5. (amended) Probe or primer, characterized in that it comprises a sequence of a nucleic acid according to claim 1.

A<sup>3</sup> 8. (amended) Method for screening cDNA or genomic DNA libraries, or for cloning isolated genomic or cDNA encoding spastin, characterized in that it uses a nucleic acid sequence according to claim 1.

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cont

9. (amended) Method according to claim 8, for identifying the genomic or cDNA sequence of the SPG4 gene of mammals.

10. (amended) Method for identifying a mutation carried by the human SPG4 gene, characterized in that it uses a nucleic acid sequence according to claim 1.

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12. (amended) Method for identifying the nucleic acid sequences which promote and/or regulate the expression of the SPG4 gene, characterized in that it uses a nucleic acid sequence according to claim 1.

13. (amended) Nucleic acid identified using a method according to claim 9.

14. (amended) Polypeptide encoded by a nucleic acid according to claim 1.

15. (amended) Polypeptide according to claim 14, with the exception of the 584 amino acid peptide, the sequence of which is identified in the GenBank databank under the accession number AB029006.

16. (amended) Polypeptide according to claim 14, characterized in that it comprises an amino acid sequence chosen from the group comprising:

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a) the sequence SEQ ID No. 3, the sequence SEQ ID No. 73, the sequence SEQ ID No. 107 or the sequence of at least 10 consecutive amino acids of one of these sequences; and

b) the sequences which are homologs or variants of the sequences SEQ ID No. 3, SEQ ID No. 73 or SEQ ID No. 107.

17. (amended) Polypeptide according to claim 14, characterized in that it comprises the sequence of at least 8 consecutive amino acids of the sequence of the aa 197-228, ends inclusive, fragment of the sequence SEQ ID No. 3.

18. (amended) Polypeptide according to claim 14, characterized in that it comprises an amino acid sequence chosen from the group comprising the sequence SEQ ID No. 3, the sequence SEQ ID No. 73, the sequence SEQ ID No. 107, which sequences carrying at least one of the mutations corresponding to a natural polymorphism in humans, and the sequences of the fragments thereof of at least 10 consecutive amino acids.

19. (amended) Cloning and/or expression vector containing a nucleic acid sequence according to claim 1.

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21. (amended) Host cell transformed with a vector according to claim 19.

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23. (amended) Mammal, except a human, according to claim 22, comprising a transformed cell, characterized in that the sequence of at least one of the two alleles of the SPG4 gene contains at least one of the mutations corresponding to a natural polymorphism in humans.

24. (amended) Use of a nucleic acid sequence according to claim 5, as a probe or primer, for detecting and/or amplifying nucleic acid sequences.

25. (amended) Use of a nucleic acid sequence according to claim 1, for screening a genomic or cDNA library.

26. (amended) Use of a nucleic acid sequence according to claim 1, for producing a recombinant or synthetic polypeptide.

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29. (amended) Monoclonal or polyclonal antibodies or their fragments, chimeric antibodies or immunoconjugates, characterized in that they are capable of specifically recognizing a polypeptide according to claim 14.

30. (amended) Method for detecting and/or purifying a polypeptide, characterized in that it uses an antibody according to claim 29.

31. (amended) Method for genotypic diagnosis of AD-HSP associated with the SPG4 gene, characterized in that a nucleic acid sequence according to claim 1 is used.

32. (amended) Method for genotypic diagnosis of AD-HSP associated with the presence of at least one mutation on a sequence of the SPG4 gene, using a biological sample from a patient, characterized in that it includes the following steps:

a) where appropriate, isolation of the genomic DNA from the biological sample to be analyzed, or production of cDNA from the RNA of the biological sample;

b) specific amplification of said DNA sequence of the SPG4 gene likely to contain a mutation, using primers according to claim 5;

c) analysis of the amplification products obtained and comparison of their sequence with the corresponding normal sequence of the SPG4 gene.

33. (amended) Method for diagnosing AD-HSP associated with abnormal expression of a polypeptide encoded by the SPG4 gene, characterized in that one or more antibodies according to claim 29 is brought into contact with the biological material to be tested, under conditions which allow the possible formation of specific immunological complexes between said polypeptide and said antibody, and in that the immunological complexes possibly formed are detected and/or quantified.

34. (amended) Method for selecting a chemical or biochemical compound which is capable of modulating the expression or the activity of a polypeptide encoded by the 5PG4 gene, characterized in that it comprises bringing a nucleic acid sequence according to claim 1 into contact with a candidate compound, and detecting a modification of the activity of said polypeptide.

35. (amended) Use of a nucleic acid sequence according to claim 1,  
for studying the expression or the activity of the SPG4 gene.

36. (amended) Kit for diagnosis, characterized in that it comprises at least a nucleic acid according to claim 5.

Add the following new claims 37-40:

37. (new claim) Method for selecting a chemical or biochemical compound which is capable of modulating the expression or the activity of a polypeptide encoded by the SPG4 gene, characterized in that it comprises bringing a nucleic acid sequence according to claim 14 into contact with a candidate compound, and detecting a modification of the activity of said polypeptide.

38. (new claim) Use of a polypeptide according to claim 14 for studying the expression or the activity of the SPG4 gene.

39. (new claim) Kit for diagnosis, characterized in that it comprises at least an antibody according to claim 29.

40. (new claim) Use of an antibody according to claim 29 for studying the expression or the activity of the SPG4 gene.

IN THE SEQUENCE LISTING

Line <110>, replace "CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE - CNRS" with the following:

-- Weissenbach, Jean  
Hazan, Jamilé--.

Line <130>, replace "D18374" with --R-341894--.